## REMARKS

Claims 1-21 are pending in the application and have been examined. Claims 1-21 stand rejected. Claims 20 and 22 have been canceled. Claim 1 has been amended. Reconsideration and allowance of Claims 1-19 and 21 is respectfully requested.

The Rejection of Claims 1-18 and 20-21 Under 35 U.S.C. § 102(b) as Being Anticipated by U.S. 5,294,549 (Pullman et al.)

Claims 1-18 and 20-21 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. 5,294,549 (Pullman et al.).

Without acquiescing to the Examiner's position, but in order to facilitate prosecution, Claim 1, from which Claims 2-18 and 21 depend, has been amended to clarify the invention, and recites, as amended:

A method for producing a synchronized population of conifer somatic embryos, the method comprising:

(a) cultivating pre-cotyledonary conifer embryogenic cells in, or on a maintenance medium comprising nutrients that sustain the embryos and one or more agents for adjusting the osmolality of the medium to a desired range;

(b) cultivating the pre-cotyledonary conifer embryogenic cells from step (a) for a period of at least 0.5 week in, or on, a synchronization medium that comprises an absorbent composition and at least one synchronization agent selected from the group consisting of abscisic acid and a gibberellin, wherein the absorbent composition and the at least one synchronization agent are present at a concentration effective to produce a synchronized population of pre-cotyledonary conifer somatic embryos wherein at least 50% of the embryos in the synchronized population are at the same developmental stage; and

(c) transferring the synchronized population of pre-cotyledonary conifer somatic embryos from step (b) to a development medium for synchronized cotyledonary embryo development.

Support for this amendment is found throughout the application as filed, for example, at page 8, lines 1-13; page 9, lines 5-29; page 11, lines 7-14; and Examples 1-2.

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It is respectfully submitted that Pullman et al. does not anticipate the claimed invention as amended. In order to anticipate, the reference must disclose, either expressly or inherently, each and every element of the claim. M.P.E.P. 2131. Pullman et al. discloses a multistage culturing process as follows: "[a] suitable explant, typically the fertilized embryo excised from an immature seed, is first cultured on a medium that induces multiple early stage proembryos. These are multiplied in a second culture having reduced growth hormones. The early stage embryos may then be placed in or on a late stage proembryo development culture in order to develop very robust late stage proembryos having at least 100 cells. Culturing from this point continues in a cotyledonary embryo development medium containing an active gibberellin (GA) in an amount up to about 50 mg/L. Preferably exogenous abscisic acid (ABA) is also present in a similar amount." Pullman et al. abstract.

In contrast to the claimed invention, Pullman et al. does not teach or remotely suggest any method for producing synchronized embryos, and in particular Pullman et al. does not teach or suggest the claimed method comprising the steps of (a) culturing embryos in maintenance medium to multiply the embryos; then (b) cultivating the pre-cotyledonary conifer embryogenic cells from step (a) for a period of at least 0.5 week in, or on, a synchronization medium that comprises an absorbent composition and at least one synchronization agent selected from the group consisting of abscisic acid and a gibberellin, wherein the absorbent composition and the at least one synchronization agent are present at a concentration effective to produce a synchronized population of pre-cotyledonary conifer somatic embryos wherein at least 50% of the embryos in the synchronized population are at the same developmental stage; and then (c) culturing the synchronized embryos in a development medium.

As described in Examples 1 and 2 of the instant specification, the present inventors discovered through experimentation that culturing conifer embryos in synchronization medium containing activated charcoal and at least one of abscisic acid and a gibberellin prior to

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incubation in development media inhibited precocious embryo development and greening, while promoting singulation and synchronization of the cultures, resulting in embryos very uniform in size in comparison to control cultures. See specification at page 19, lines 19-31. As further described in Examples 1 and 2 of the instant specification, in the absence of the step of culturing in a synchronization medium, the control cultures grown in maintenance medium were cleaving, growing and forming embryo suspensor masses, with embryos seen in many different stages. See specification at page 19, lines 1-5. Because Pullman et al. does not disclose or suggest culturing conifer embryos in a synchronization medium as claimed, the cited reference fails to teach or suggest all the elements of the claimed invention and therefore does not anticipate or render obvious the method of the claimed invention.

The Examiner has asserted that Pullman et al. teaches a method of cultivation of early stage proembryos which are pre-cotyledonary conifer embryogenic cells (specification at page 3, lines 25-27), in a medium with a pH of 5.7 (Col. 13, Table 1), comprising 10.52 mg/L-15.85mg/L of *auxins*, 7.92 mg/L-16.5mg/L of *cytokinins* in combination with 0.05-1.0% activated charcoal (Col. 7, lines 24-28), for a period of a week and then transferred to a cotyledonary embryo development (Col. 19, Example 6, lines 40-43; Col. 7, lines 29-31, emphasis added). In this regard, it is noted that the passages cited by the Examiner are not relevant to the claimed invention which is directed to a synchronization media containing an absorbent composition and at least one synchronization agent selected from the group consisting of abscisic acid and a gibberellin.

With regard to the Examiner's assertion that Pullman et al. discloses a medium with abscisic acid in combination with activated charcoal at Col. 13, lines 49-51, and Col. 8, lines 4-8, it is noted that the referenced passages refer to the use of gibberellin or abscisic acid in the context of development or singulation media, and do not disclose or suggest the claimed method as amended. Finally, the Examiner has taken the view that the induction medium, maintenance

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medium, synchronization medium, development medium, stratification medium and germination medium described in the instant specification, *e.g.*, page 15, Table 2, are the media used by Pullman et al. It is noted that the Examiner has mischaracterized the teachings of Pullman et al. in this regard. Contrary to the Examiner's characterization that the media are the same in the instant specification and Table 2 of Pullman et al., in addition to other differences, it is noted that Table 2 of Pullman et al. is silent with respect to a synchronization medium or any pre-development medium comprising an absorbent composition and at least one synchronization agent. For example, it is noted in Table 2 at Col. 13 of Pullman et al. discloses: Stage I initiation medium contains activated charcoal (2500), no ABA, no GA; Stage II Maintenance I medium contains no activated charcoal, no ABA, no GA; Stage III Maintenance II medium contains no activated charcoal, no ABA, no GA; and Stage IV singulation medium contains 5-15 ABA, 0-15 GA, and no activated charcoal.

Thus, it is submitted that Pullman et al., does not anticipate nor render obvious the claimed invention, as amended. Removal of this ground of rejection is respectfully requested.

The Rejection of Claim 19 Under 35 U.S.C. § 103(a) as Being Unpatentable Over U.S. 5,294,549 (Pullman et al.)

Claim 19 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. 5,294,549 (Pullman et al.). The Examiner states that the recitation "produce a synchronized population of conifer somatic embryos" has not been given patentable weight because the recitation occurs in the preamble. The Examiner has also taken the view that Pullman et al. teach that when the method for producing conifer somatic embryos is used to reproduce loblolly pine trees, the osmotic level should be at least 200 mM/kg and preferably 240mM/kg or even higher (Col. 7, lines 59-61). The Examiner further characterizes Pullman et al. as teaching that "these adjustments are considered to be within the routine experimental capability of those skilled in the art of tissue culture" (Col. 13, lines 3-10). The Examiner then concludes that the teachings of

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Pullman et al. suggest all the claim elements of the claimed invention. Applicants disagree with the Examiner's conclusions for the following reasons.

It is submitted that the Examiner has failed to establish a *prima facie* case of obviousness because Pullman et al. fails to disclose or suggest all the claimed elements of the claimed invention. Claim 19 depends from Claim 1, which has been amended as described. For at least the reasons described above, amended Claim 1 is neither anticipated nor rendered obvious by the Pullman et al. reference. Moreover, as previously acknowledged by the Examiner, Pullman et al. fails to teach a method for producing a synchronized population of Loblolly pine embryos as required by Claim 19. Therefore, the cited reference fails to teach or suggest all the elements of the invention as claimed. Removal of this ground of rejection is respectfully requested.

## CONCLUSION

In view of the foregoing remarks, applicants respectfully submit that all the pending claims are in condition for allowance. If any issues remain that may be expeditiously addressed in a telephone interview, the Examiner is encouraged to contact the undersigned attorney at the telephone number listed below.

Respectfully submitted,

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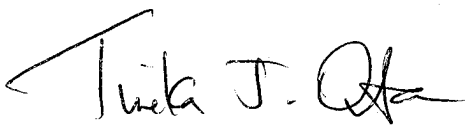

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